



## Edible Food Packaging as an Eco-friendly Technology using Green Marketing Strategy

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### Abstract

Businesses and consumers are emphasizing the importance of going green these days. Much effort has been dedicated to preserving the environment following the awareness of the amount of nonessential plastic waste produced from packaging goods. This paper investigates the application of edible packaging in the food packaging industry and evaluates the strengths, weakness, opportunities and threats (SWOT), segmentation, target market, positioning, differentiation and green marketing mix as a green marketing strategy.

**Keywords:** Edible Film, Eco-friendly, Green Marketing, Edible Food Packaging.

### 1. Introduction

For the past six decades, plastic packaging consumption has been increasing drastically. It was reported that more than 70% of China's polyethylene consumption was in packaging industry. It is also expected the market for global moulded plastic to reach up to 157 million tons by 2017 ("Rise in China's plastics consumption in 2012", 2012). Plastics are very harmful to the environment because it takes a very long time to decompose and harms the environment. Numerous organizations are attempting to reduce the utilization of plastic by encouraging consumers to use biodegradable plastic, to participate in recycling programs and bring their own shopping bags (He, 2012; Hopewell, Dvorak & Kosior, 2009). More than that, researchers have been coming up with fresh and innovative ideas in order to reduce plastic consumption especially in packaging. Through the years, edible film has been trending as an effort to minimize plastic usage in food wrappers, in food coatings and in powdered drink mix. This paper examines the role of edible films as a green product particularly in the packaging industry through a green marketing approach to provide a sustainable environment. It discusses the application of edible packaging as a new technology and it analyses the SWOT, green marketing mix, segmentation, target market, positioning and differentiation.

### 2. What Is Edible Film?

Edible film is defined as thin, continuous or unbroken sheets made up of edible substances (Balasubramaniam, Chinnan, Mallikarjunan & Philips, 2007; Guilbert, Cuq & Gontard, 1997). They are excellent alternative to conventional plastic or even biodegradable plastic in different industries. Natural polymers like lipids and protein are used to produce the environmental friendly edible films. They can be made of soy or milk protein molecules too (Eagle, 2004). These films can be placed in between food element, act as a food wrapper and a pocket to hold food (Hernandez-Izquierdo & Krochta, 2008). Besides, they prevent oxygen absorption, offer physical protection and act as a substitute for plastics in wrapping materials. For a broader variety of application in the industries, antioxidant and flavors can be added (Bourtoom, 2009).

### 3. Edible Food Packaging Industry

The food packaging industry consumes a significant amount of plastics every year (Thompson, Swan, Moore, & vom Saal, 2009). Several companies have already improved and launched their products in the market. WikiCells Inc, inspired by the skin of grapes and apples which are edible, came out with their very own cheese and yoghurt. These food skins are totally biodegradable and offer further health benefit. Besides, they are looking into espresso shelled in chocolate skin and juices with fruits' skin (Kemp, 2012). MonoSol Inc, on the other hand invented wrapper or sachets which are soluble in hot or cold water. It is ideal for instant beverages such as coffee, chocolate or tea (Macasai, 2012). More than that, Bob's Brazilian fast food company has initiated edible wrapper for burgers and they significantly reduced superfluous food packaging ("Brazilian chain wraps burgers in edible paper", 2012).

### 4. Green Marketing

The American Marketing Association (AMA) provides a definition for green marketing; the marketing of products which are presumably safe for environment, generate minimal harmful effects to the environment and efforts made by organizations to create products which are beneficial to the environment. It is also a firm's decisions on policies which influence the environment's quality and it shows a company's concern to the society and community (Yazdanifard & Mercy, 2011). Another definition provided by Yakup and Sevil (2011) is green marketing includes a wide range of activities consisting of product alteration, production process modification, packaging transformation, and also advertising revolution.

## 5. SWOT Analysis

According to American Marketing Association (AMA), SWOT analysis assesses both the internal and external factors which are the strengths, weaknesses, opportunities and threats. Strengths and weaknesses are of the internal while opportunities and threats are of the external. These factors are contributed by facts to recognize trends and conditions with the prospective to affect the business and the selection of strategies to be implemented. It incorporates the four major elements to boost strength, benefit from opportunities, deal with external issues, avoid threats, and minimize weaknesses (DeSilets & Lynore, 2008). The SWOT analysis includes:

- Strength;
- Weaknesses;
- Opportunities and;
- Threats

In terms of strength, edible film is fully eco-friendly and it marks a change in the packaging industry. Not only it is not harmful to the surroundings, but it reduces waste of food packaging generated by businesses and households. Besides, its processing method is not complicated. It is more efficient because of its lower processing cost, lower processing time and it increases the precision of operation (“MonoSol ready to commercialize edible film”, 2012). It is also convenient to be used by consumers as the thin layer of film will melt once it is in contact with saliva. The films can be customized according to the demand of the market. They can be tasteless, colorless, and odorless or can be customized with different shades of colors, flavors and even sweetness. Instead of being a mere layer to shell food, it also adds nutritious value to food as the composition is made of natural ingredients.

The weakness of the edible packaging is the image of the technology as it is still very new in the market. A lot of people may not have heard of it, so consumers may lack confidence or do not see a need of this technology in the present market.

There are numerous opportunities and potentials for the edible film technology. The food packaging industry is huge and is expected to grow. As consumers are more aware of environmental concerns, they are more motivated by green products and technology.

Edible films will face threats as well particularly the entry of new competitors. Competitors could imitate and reproduce them by using other vegetables or fruits composition in the making process. Another challenge would be stakeholders’ perception toward the edible feature of the packaging. It might not be easy to change the culture of consumers whom will always unwrap and throw the packaging before consuming food.

## 6. Green Segmentation

Segmentation is to categorize different consumers according to their common needs. The intensity of their needs may differ and businesses have to identify them. Green products are very appealing to those who sees green lifestyle as a priority. Grant (2008) categorized three different shades of green

- Dark green lifestyle which constitutes to 8% to 10% of people;
- Light green lifestyle is about 20% to 40% of people; and
- Uncommitted lifestyle which contributes to 60% to 80%.

Dark green lifestyle shows that those who are committed to a greener environment are individuals with highest education level. Their age range is from 20 to 39. They have more qualified jobs and they are more likely to have higher average income (Pa, Barata Raposo, & Filho, 2009). This segment is highly involved and has great sense of social responsibility. They are committed to reflect their concern through purchasing of green products and they are willing to assist the government in activities to reduce pollution (Awad, 2011).

It is revealed that people in the light that green group have a higher average age. Their educational and income level are both moderate. They perceived going green is government’s responsibility. They have the knowledge about green products, but they are not likely to increase their spending by purchasing green products. Light consumers believed that eco-products have inferior quality and are much more expensive (Chan, 2000).

The third segment would be the “uncommitted green”. In comparison with other groups, they have the lowest education level and base salary. Their environmental knowledge is superficial and ecological issues are not their concerns. They seamlessly harm the environment which is portrayed by their purchasing behaviors (Awad, 2011). Having discussed the Strengths, weakness, opportunities and threats of the edible film technology, it is now necessary to determine a specific target to market the technology to. In determining the target market, a market must first be segmented to clearly distinguish the market.

## 7. Target Market

The main target market would be those who are in the dark green segment. This is because they have a higher consciousness on green products. Besides, they have a higher spending power and they are more motivated in purchasing eco goods. However, it is important not to create an extreme green image for this technology to avoid the mindset of consumers that this is only for environmental extremists. Instead, businesses should focus on informing and delivering the message to consumers about this green product which adds values to those who are in the light green and uncommitted segment.

## 8. Differentiation and Positioning

The edible food packaging offers a revolutionary way of consuming food and beverages. Not mentioning its green properties, this packaging provides health benefits and flavors to food. Consumers should be able to distinguish edible packaging with biodegradable plastics. Both are 100% biodegradable, but edible packaging is more valuable as it can be

tailored according to the market demand. Following the positioning process, it is necessary to differentiate this technology and product from others. This is done through the product, price, promotion and position which come from the application of such technology.

## 9. Green Marketing Mix

It is important to evaluate the green marketing mix in order to understand the position of the green product. According to Wang (2012), the four elements are: (1) Product; (2) Price; (3) Promotion and; (4) Place.

### (1) Product

This green technology is able to produce better quality products. This is because it carries a higher value than typical products. This value comes from the convenience of eco-friendly packed food and beverages. For instance, upon opening a large packet of 30 individual sachets of instant coffee, one can easily put a sachet in a cup of hot or cold water without peeling off the seal. The edible layer which holds the coffee powder will dissolve upon contact with water.

### (2) Price

The common misconception about environmental goods is that they are less affordable compared to normal goods. The reason to such a statement is that, the goods would have to go through much research and development before having to be environmental friendly. However this is not necessarily the case. The white rabbit sweet which uses such edible films is priced at a highly affordable price in comparison to the other sweets and candy (“China's best-known milk candy to return to domestic market soon”, 2008). Hence price wise, a product with edible packaging does not necessarily has to be priced beyond affordability.

### (3) Promotion

Advertisements of products featuring edible packaging should focus on its convenience, uniqueness and its green properties. Consumers should also be informed of the firm's contribution to the community and the food industry. The edible skin for food and dissolvable properties for beverages should be introduced and demonstrated to stakeholders as something very exclusive. With the rising usage of the societal marketing concept in today's business marketing strategy, this technology can easily find its place amongst business within the food industry. Furthermore, when a company considers the adoption of this technology, in the long term they would be serving the well-being of the society in a much greater way than could ever be imagined.

### (4) Place

With the combination of all the factors, the medium for distribution is also very important. For this technology, intensive distribution could be practical. Grocery stores would be suitable for households to obtain packets of instant coffee or chocolate, yoghurt and frozen food while coffee shops can provide deserts wrapped in edible packaging.

## 10. Discussion

Environmental Protection Agency [EPA] statistics revealed that show that food packaging and containers contribute 30.2% of household waste in U.S. The alarming amount of redundant food packaging needs a solution. Eco-friendly products have been drastically introduced in the market by corporate. Creating an eco product is not the only concern anymore due to the market competitiveness, but the values of the invention (Joo-Hyun, 2012). Firms should be familiar with the purchasers and provide them with sufficient information about the technology. In this way, they are able to associate themselves with the edible food packaging. Consumers must recognize and believe that the product is usable and convenient as well as eco-friendly. They like to relate themselves with green products and when they find satisfaction with these products, it is very likely that it can lead to consumer loyalty (Yazdanifard & Mercy, 2011). Besides, stakeholders should be involved in the production creation process to facilitate firms in order to create better products (Miller & Merrilees, 2013). The green marketing strategy is analyzed systematically with the SWOT analysis, the green marketing mix, segmentation, target market, positioning and differentiation. As this technology is very new, there is a high possibility of new competitors to enter the market. Therefore, the strong illustration of the firm as a leader in the market while portraying the best quality will provide assurance to consumers. In the beginning, end users may not be able to comprehend the concept of packaging which is safe for consumption. The price of this technology will be higher than conventional food packaging. As a result, the advertising team should convince and create the impression that edible packaging which shells food is delectable, nutritious and also protects the environment.

## 11. Conclusion

In conclusion, edible food packaging is an innovative technology in the market which will lead to a new phase in the food packaging industry. Not only will these packaging method turn into a potential profitable profit, but it adds values to the stakeholders and the community. This technology undeniably lessens the amount of plastic packaging waste. It is in line with the green marketing model which emphasizes the maximum benefits and minimum harm to the surroundings.

Firms must provide sufficient information to educate and enlighten consumers. Furthermore, different green shades of stakeholders are identified with segmentation. Businesses ought to target dark green consumers who are found to be highly concern and active with environmental issues. They are the potential customers who have higher spending power and show enthusiasm in eco products. Besides, consumers should be able to make a distinction between edible packaging from other types of packaging. Finally, the green product should not only display an environmental friendly image, but also provides benefits and convenience to stakeholders with an accurate green marketing strategy.

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